SLOVENSKI STANDARD
SIST EN 50490:2009

01-januar-2009

Električne inštalacije za svetilne in navigacijske naprave na letališčih - Tehnične zahteve za sisteme krmiljenja in kontrole navigacijskih naprav na letališčih - Enote za selektivno preklapljanje in nadzor posamezne luči

Electrical installations for lighting and beaconing of aerodromes - Technical requirements for aeronautical ground lighting control and monitoring systems - Units for selective switching and monitoring of individual lamps

Elektrische Anlagen für Beleuchtung und Befeuerung von Flugplätzen - Technische Anforderungen für Steuer- und Überwachungssysteme von Flugplatzbefeuerungsanlagen - Geräte für selektives Schalten und Überwachen individueller Feuer

Installations électriques pour l'éclairage et le balisage des aérodromes - Exigences techniques pour les systèmes de contrôle et de commande du balisage aéronautique au sol - Unités pour la commutation sélective et le contrôle de lampes individuelles

Ta slovenski standard je istoveten z: **EN 50490:2008**

ICS:

91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems
93.120	Gradnja letališč	Construction of airports

SIST EN 50490:2009 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50490

August 2008

ICS 93.120

English version

Electrical installations for lighting and beaconing of aerodromes - Technical requirements for aeronautical ground lighting control and monitoring systems - Units for selective switching and monitoring of individual lamps

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 50490:2008 E

Foreword

This European Standard was prepared by Working Group 1 of the Technical Committee CENELEC TC 97, Electrical installations for lighting and beaconing of aerodromes.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50490 on 2008-04-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2009-04-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-04-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2004/108/EC. See Annex ZZ.

Contents

Introduction

Aeronautical Ground Lighting (AGL) at an aerodrome provides the pilots of aircraft and drivers of vehicles moving on the aerodrome surface, with guidance information. Selective switching and individual lamp monitoring is one way of controlling the AGL to achieve this.

1 Scope

This European Standard is intended to give general minimum frame requirements for units that are independent of the technology used for switching and/or monitoring of individual or group of lamps in an AGL series circuit.

This European Standard

- applies to the units that are directly electrically connected to the primary or secondary side of an AGL series circuit and are needed to provide the selective switching and/or monitoring of lamps,
- does not cover communication protocols and application procedures,
- does not treat system aspects that influence the AGL operation.

NOTE These units may be used forming part of either a SMGCS or A-SMGCS to guide and/or control the surface movement of aircraft by means of visual aids.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 60439-1, *Low voltage switchgear and control gear assemblies – Part 1: Type tested and partially type-tested assemblies* (IEC 60439-1)

EN 60529, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529)

EN 61000-4-5, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques - Surge Immunity test* (IEC 61000-4-5)

EN 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards - Immunity for industrial environments* (IEC 61000-6-2)

EN 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments* (IEC 61000-6-3)

EN 61000-6-4, *Electromagnetic compatibility (EMC) – Part 6-4: Generic standards - Emission standard for industrial environments* (IEC 61000-6-4)

EN 61822, *Electrical installations for lighting and beaconing of aerodromes - Constant current regulators* (IEC 61822)

EN 61823, *Electrical installations for lighting and beaconing of aerodromes - AGL series transformers* (IEC 61823, mod.)

EN 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK-Code)* (IEC 62262)

IEC/TS 61000-6-5, *Electromagnetic compatibility (EMC) – Part 6-5: Generic standards - Immunity for power station and substation environments*

3 Definitions

For the purposes of this standard the following definitions apply.

Where the terms voltage and current are used, they shall be r.m.s. values unless otherwise stated.

3.1
lamp
light emitting device

3.2
routine test
test for the purpose of checking manufactured products for compliance with this standard

3.3
service voltage
the nominal voltage at which a unit is designed to operate

3.4
type test
test to confirm that the product design and production processes are capable of providing products that meet the requirements of this standard

3.5
type test sample
a sample consisting of one or more similar samples used for a type test

3.6
EUT
Equipment or Unit under Test

3.7
selective switching
switching of an individual lamp or an individual group of lamps

3.8
unit
complete physical assembly capable of performing functions

3.9
function
a task performed by a component or a unit

3.10
component
physical part of a unit

3.11
communication
transmission and receipt of data using an established protocol

4 General requirements

4.1 Electrical connections

Where a unit is provided with leads and/or connectors for connection to the primary or secondary side of an AGL series circuit these shall comply, where applicable, with the requirements of EN 61823 stated below:

- mechanical characteristics of connectors;
- electrical characteristics of the leads and connectors;
- mechanical strength of the interface of all leads with the unit, where the unit is intended to be handled in the same way as a series circuit transformer.

4.2 Enclosure for indoor units

Units, intended for indoor use, shall provide protection at least according to IP 20 (EN 60529).

4.3 Enclosure for outdoor units

Units, intended for outdoor use, shall provide protection at least according to IP 68 (EN 60529). In case the unit is intended for connection only to the secondary and only for installation above ground, the IP-rating can be reduced to IP 54 (EN 60529). The housing material shall comply with the applicable requirements of EN 61823.

4.4 Mechanical impact protection

The protection degree against external mechanical impacts (code IK EN 62262) shall be announced by the manufacturer in the product data sheet.

4.5 Earthing

Any exposed conductive part of the housing shall be provided with an external earthing terminal to enable independent safety earth connection.

4.6 Service temperature and humidity

For outdoor units the ambient temperature range shall be at least – 25 °C to + 55 °C. For indoor units the ambient temperature range shall be at least 0 °C to + 50 °C. The range for relative humidity shall be from 10 % to 95 % non-condensing. Where higher humidity rating is required or where condensing can be expected, the unit shall be designed as intended for underground use. See 4.3.

4.7 Reliability

The MTBF of the unit shall be published in the manufacturer's technical data.

4.8 Electrical characteristics

4.8.1 Current range

The unit shall operate in the current range corresponding to the provisions contained in EN 61822 and EN 61823.

4.8.2 Voltage range

The unit shall operate in the voltage range corresponding to the provisions contained in EN 61822.

4.8.3 Protection level

Where a unit, intended to be connected to a series circuit (directly or indirectly via a series circuit transformer), provides an electrical connection to an external low voltage system, the unit shall be designed such that this external system is protected against the maximum voltage of the series circuit as specified in EN 61822 for the maximum rated CCR.

4.8.4 Load range

The maximum and minimum loads and the types of loads to be connected to the unit shall be published in the manufacturer's technical data.

4.8.5 Power consumption

The active and reactive power consumption of the unit at each operating mode shall be published in the manufacturer's technical data.

4.8.6 Current reduction

The unit shall not reduce the current available to the lamp by more than 10 mA when the lamp is illuminated regardless of the selected brightness step on the CCR.

NOTE 10 mA is considered to have an insignificant effect on the light output of the lamp.

4.8.7 Electromagnetic compatibility (EMC)

4.8.7.1 Limits for emission

The units shall comply with EN 61000-6-3, excluding EN 61000-3-2 / EN 61000-3-12 and EN 61000-3-3 / EN 61000-3-11.

4.8.7.2 Limits for immunity

The units shall comply to the generic immunity standards for industrial environments EN 61000-6-2. For indoor equipment this shall be supplemented by applicable parts of IEC/TS 61000-6-5 containing EMC immunity requirements for power station and substation environments (locations where apparatus for Electricity Utilities are installed). The units shall comply with requirements for apparatus installed in location type G (power stations and medium voltage substations) as defined in IEC/TS 61000-6-5.

Units shall be designed to withstand voltage and current surges according to IEC 61000-4-5, Class 4.

If a temporary functional degradation occurs during the surge test, it may not last longer than for a period of 10 s.

4.9 Marking

Every unit shall be permanently marked with at least the following information:

- manufacturer name;
- product name;
- version identification;
- identification of the individual unit.